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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/875,296	06/07/2001	Ryoichi Yamamoto	W-2723 (07250001AA)	4660

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EXAMINER
BROOKE, MICHAEL S

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 08/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/875,296	YAMAMOTO ET AL.	
	Examiner	Art Unit	
	Michael S. Brooke	2853	

-- The MAILING DATE of this communication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2003* .

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 9-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 9-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 June 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *10 March 2003* is: a)☐ approved b)☒ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Drawings

1. The corrected or substitute drawings were received on 03/10/03. These drawings are not accepted. Fig. 8 is identified in the specification as "conventional art" and has been labeled as "prior art". Figs. 9A-9C are also identified in the specification as illustrating the conventional art. Accordingly, these figures should be labeled as "prior art."

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3, 9, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's Admitted Prior Art (AAPA) in view of Kitahiro (JP 02158156 translation).

The AAPA teaches an ink jet print head for a printer comprising a head body (150) having a plurality of orifices (20) that extend substantially across the head, a plurality of ejection units (see p. 2:15) corresponding to each orifice, a plurality of individual flow paths formed by partition walls (15) and a least one common ink flow path (16) that extends substantially across the head. An ink supply bore hole (18) is

bored on a side opposite the orifices and supplies ink to the at least one common flow path.

The AAPA teaches the claimed invention with the exception of a metal film at least on a part of at least one side of the head body.

Kitahiro teaches a semiconductor device comprising a semiconductor element (1) and a metal reinforcing layer (3, see p. 5:1-13). The reinforcing layer is formed on the backside (the side which is attached to the supporting structure) of the semiconductor element (p. 4:25). The reinforcing layer allows the thickness of the semiconductor element to be reduced without decreasing its strength (p. 4, para. 2). Kitahiro is silent as to the thickness of the reinforcing layer. While Kitahiro is not directed to an ink jet print head, its teachings are directly relevant to the ink jet print of the AAPA, as this print head is a semiconductor device.

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made to have provided the AAPA with a metal film at least on a part of at least one side of the head body in order to reduce the thickness of the semiconductor substrate without decreasing the strength of the substrate, as taught by Kitahiro. Furthermore, it would have been obvious to one of ordinary skill in the ink jet art to pattern the reinforcing layer to allow for ink inlets or any other openings that are required for the operation of the print head.

4. Claims 2, 4,10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Kitahiro (JP

02158156 translation), as applied to claims 1, 3, 9, 11 and 12 above, and further in view of Gaynes et al. (6,197,619).

The AAPA, as modified teaches the claimed invention with the exception of the layer being made of Ni and the layer having a thickness of 0.1 microns to 0.9 microns.

Gaynes et al. teaches a method of reinforcing a semiconductor device by applying a Ni layer (107) having a thickness of 0.1 microns to 4 microns (col. 3:23-29). providing such a layer prevents cracking due to warping or mechanical loading by reinforcing the surface of the device (col.1:56-60).

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made to have provided the AAPA, as modified, with a Ni film having a thickness of 0.1 to 0.9 microns for the purpose of reinforcing the device to prevent cracking due to warping or mechanical loading, as taught by Gaynes et al.

Response to Arguments

5. Applicant's arguments filed 07/21/03 are not persuasive.

In response to applicant's argument that Kitahiro is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the present invention is directed to increasing the mechanical strength of an ink jet print head, which is a semi-conductor device, by attaching a metal reinforcing layer to the

print head substrate. Kitahiro teaches uses a metal reinforcing plate to increase the mechanical strength of a semi-conductor device that is used in an electrical device. The use of the reinforcing plate allows the thickness of the substrate to be reduced, which allows the overall size of the device to be reduced. For example, Hashizume et al. (6,260,960) teaches that the substrate thickness may be selected depending on the size of the print head to be manufactured. Thus, if one of ordinary skill in the ink jet art sought to manufacture a very small print head, than the substrate would be very thin. One of ordinary skill in the art would recognize that the teachings of Kitahiro would be reasonably pertinent to the problem of strengthening the thin substrate. Thus, Applicant's assertion that a thin substrate is not desirable in an ink jet head, is unfounded. Accordingly, Kitahiro is analogous art to the AAPA.

Applicant makes a number of arguments concerning the incompatibility of the specific structures of Kitahiro with the AAPA. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, Kitahiro provides the teaching of reducing substrate thickness by providing a reinforcing layer with strengthening the substrate. The combined teachings of the AAPA and Kitahiro would have suggested to one of ordinary skill in the ink jet art that overall thickness of the

AAPA substrate could be reduced by applying a reinforcing layer. The use of the reinforcing layer would enable the overall size of the print head to be reduced.

Applicant's argument that the substrate of Kitahiro is subjected to forces different than the AAPA substrate, is not persuasive. Kitahiro, recognizes that a semiconductor chip needs to be very thin, which exposes the chip to potential cracking, due to mechanical stress. In order to preserve the thinness of the chip, a metal reinforcing layer is used to protect the chip from stresses which may crack the chip. This is the same general reason that the present invention provides its reinforcing layer. The Applicant does not claim that the substrate is subject to any particular forces. Thus, the combination of the prior art is seen to read on the limitations, as claimed.

Conclusion

6. This is a RCE of applicant's earlier Application No. 09/875,296. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael S. Brooke whose telephone number is 703-305-0262. The examiner can normally be reached on M-F 5:30-2:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 703 308-4896. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

Michael S. Brooke
Examiner
Art Unit 2853

MSB
August 10, 2003

Stephen D. Meier
Primary Examiner